

Characterization of Organic Carbon and Elemental Carbon (OC and EC) in PM_{2.5} in Bandung, Indonesia during Wet Season

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Abstract

Particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}) poses significant health risks due to its complex chemical composition, including organic carbon (OC) and elemental carbon (EC). This study presents a comprehensive characterization of OC and EC in PM_{2.5} in Bandung city during wet season. The characterization of OC and EC was conducted using advanced analytical method, including thermal-optical analysis with IMPROVE_A method. The expected result of this study is the presence of diverse OC and EC fractions, originating from various anthropogenic and natural sources such as vehicular emissions, biomass burning, industrial activities, and secondary organic aerosol formation. The OC and EC concentrations also can be used to predict the presence of secondary pollutants formation in atmosphere. Spatial and temporal variations in OC and EC concentrations were investigated across different urban, suburban, and rural environments, highlighting the influence of local emissions, meteorological conditions, and regional transport patterns. Understanding the sources and characteristics of OC and EC in PM_{2.5} is crucial for developing effective air quality management strategies and mitigating the adverse health effects associated with particulate pollution. Overall, this study provides valuable insights into the complex nature of OC and EC in PM_{2.5}, contributing to our understanding of atmospheric chemistry and air pollution.

Early Career Scientist

YES, I am an early career scientist.